believed, to change the scope of the claims, or to be made for reasons of patentability. Claims 1 and 6 are in independent form. Favorable reconsideration is requested.

The title, abstract and Claims 2, 3, 5 and 7-15 were objected to on formal grounds, and have been amended accordingly. These objections are therefore requested to be withdrawn.

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants respectfully traverse this rejection. Applicants submit that the scope of Claim 2 is clear to one of ordinary skill in the art, and that the claim complies with the requirements of Section 112. Nonetheless, in order to advance prosecution, Claim 2 has been amended. It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Claims 1-3, 6-10 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by PCT Publication WO 97/26137 (WO '137). Claims 5 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 97/26137. Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 97/26137 in view of JP 2-187346. Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 97/26137 in view of U.S. Patent 5,548,894 (*Muto*). Applicants respectfully traverse these rejections.

One feature of the methods of Claims 1 and 6 is that a mask plate having openings corresponding to discharge ports is closely contacted with a face of a discharge port plate on an ink discharge side.

Support for this feature can be found throughout the specification, for example, at page 14, lines 4-9.

According to Applicants' understanding, WO '137 relates to a method and apparatus for forming nozzles, wherein control of the divergence of a beam is achieved by a process involving splitting the beam into sub-beams and recombining the sub-beams. As shown in Fig. 1 of WO '137, a mask 70 is located at a distance from a surface 22 of a nozzle plate 20, with a lens 80 being arranged between mask 70 and surface 22, lens 80 being separated from each of mask 70 and surface 22 by a distance. Further, as shown in Fig. 3, another mask 110, interposed between mask 70 and lens 80, may be added to the arrangement of Fig. 1. Finally, as also shown in Fig. 3, a spatial filter, for filtering out stray beams, may also be added to the arrangement of Fig. 1. The spatial filter may comprise "a mask 130 placed just in front of the nozzle plate at the point where the beams cross prior to impinging on the nozzle plate" (page 14, lines 1-3). As clearly shown in Fig. 3, mask 130 is not in contact with nozzle plate 20, but rather is separated therefrom by a distance. Applicants submit that nothing in WO '137 would teach or suggest at least the claimed feature that a mask plate having openings corresponding to discharge ports is closely contacted with a face of a discharge port plate on an ink discharge side, as recited, *inter alia*, in Claims 1 and 6.

JP '346 relates to an ink jet recording head and its manufacture, wherein laser beams are projected on an orifice plate from an ink channel side via a mask. However, Applicants submit that nothing in JP '346 would teach or suggest at least the claimed feature that a mask plate having openings corresponding to discharge ports is

closely contacted with a face of a discharge port plate on an ink discharge side, as recited, *inter alia*, in Claims 1 and 6.

According to Applicants' understanding, *Muto* relates to an ink jet head having ink-jet holes partially formed by laser-cutting and a method of manufacturing the same. According to the method of *Muto*, a blank for a nozzle plate is subjected to laser-cutting to prepare the nozzle plate, which has orifice holes which cooperate with blind holes to form ink-jet holes. However, Applicants submit that nothing in *Muto* would teach or suggest at least the claimed feature that a mask plate having openings corresponding to discharge ports is closely contacted with a face of a discharge port plate on an ink discharge side, as recited, *inter alia*, in Claims 1 and 6.

Since neither WO '137, JP '346 nor *Muto*, whether taken alone or in combination (even assuming, for the sake of argument, that such combination were permissible), contains all of the elements of Claims 1 or 6, those claims are believed allowable over the cited art.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. These claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from Claim 1 or 6 and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO ABSTRACT

The abstract has been amended as follows.

A method for processing the discharge port of an ink jet head provided with [discharge port for discharging ink and] a discharge port plate having the discharge port.[, comprising the following steps of closely contacting the] A mask plate having an opening in the form of the discharge port is closely contacted with the face of the discharge port plate on the ink discharge side.[; and forming the] The discharge port is formed on the discharge port plate by irradiating plural high energy ultraviolet parallel beams simultaneously through the mask plate in [the] a direction inclined at a specific angle to the vertical axis of the mask plate face. [With the method thus arranged, the aperture diameters on the ink discharge side can be made uniform, and the tapered configuration becoming thinner toward the ink discharge side can also be formed reliably, hence making it possible to stabilize the discharge direction of ink droplets, and enhance the flying speed of discharged ink for the performance of high quality printing with each clear dot having an extremely small amount of mist.]

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

2. (Twice Amended) [A] The method for processing [an] the ink discharge port of [an] the ink jet head according to Claim 1, wherein the plural high energy ultraviolet beams are incident upon the mask plate so that the beams are inclined at [the] a same angle with respect to the vertical axis of the mask plate.

3. (Twice Amended) [A] The method for processing [an] the ink discharge port of [an] the ink jet head according to Claim 1, wherein the plural high energy ultraviolet beams are incident upon the mask plate in directions that are equally divided with respect to a circumference of a circle about the vertical axis in the plane of the mask plate.

5. (Twice Amended) [A] The method for processing [an] the ink discharge port of [an] the ink jet head according to Claim 1, wherein the high energy ultraviolet beams are formed by four beams, and each of the four beams is inclined with respect to the vertical axis of the mask plate, and incident upon the mask plate in directions that are equally divided with respect to a circumference of a circle about the vertical axis in the plane of the mask plate, and wherein the directions form an angle of 45° with respect to an axis along the arrangement direction of the discharge ports.

7. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein said discharge port formation step is performed after the discharge port plate is bonded to the ink jet head main body.

8. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the plural high energy ultraviolet beams are incident upon the mask plate so that the beams are inclined at [the] a same angle with respect to the vertical axis of the mask plate.

9. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the plural high energy ultraviolet beams are incident upon the mask plate in directions that are equally divided with respect to a circumference of a circle about the vertical axis in the plane of the mask plate.

10. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the high energy ultraviolet beams are formed by two beams, and each of the beams is inclined symetrically with respect to the vertical axis of the mask plate, and incident upon the mask plate in a direction at right angles to an axis along the arrangement direction of the discharge ports.

11. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the high energy ultraviolet beams are formed by four beams, and each of the beams is inclined with respect to the vertical axis of the mask plate, and incident upon the mask plate in directions that are equally divided with respect to a circumference of a circle about the vertical axis in the plane of the mask plate, and wherein the directions form an angle of 45° with respect to an axis along the arrangement direction of the discharge ports.

12. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 11, wherein the ink jet head is provided with ink flow paths connected with the ink discharge ports, each ink flow path having a rectangular section, and each discharge port being arranged on an end portion of a corresponding ink flow path.

13. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the discharge port plate is formed [by] of resin.

14. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the discharge port plate is formed [by] of silicon nitride.

15. (Twice Amended) [A] The method for manufacturing [an] the ink jet head according to Claim 6, wherein the high energy ultraviolet beams are formed by a higher harmonic wave of an excimer laser or a YAG laser.